MEDLINE®
IMPROVING EFFICIENCY

CARELINE®
IMPROVING EFFICIENCY

MJB
- **S**witch **M**ode **P**ower **S**upply

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LINAK®
WE IMPROVE YOUR LIFE

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Preface

We are delighted that you have chosen a product from LINAK®.

LINAK systems are high-tech products based on many years of experience in the manufacture and development of actuators, electric control boxes, controls and chargers.

This User Manual will tell you how to install, use and maintain your LINAK equipment.

We are sure that your LINAK system will give you many years of problem-free operation. Before our products leave the factory they undergo full function and quality testing. Should you nevertheless experience problems with your systems, you are always welcome to contact your local dealer.

LINAK subsidiaries and some distributors situated all over the world have authorised service centres, which are always ready to help you.

LINAK provides a warranty on all its products. This warranty, however, is subject to correct use in accordance with the specifications, maintenance being done correctly and any repairs being carried out at a service centre, which is authorised to repair LINAK products.

Changes in installation and use of LINAK systems can affect their operation and durability. The products are not to be opened by unauthorised personnel. The User Manual has been written on the basis of our present technical knowledge. We are constantly working on updating the information and we therefore reserve the right to carry out technical modifications.

LINAK A/S

Important information

Description of the various signs used in this manual.

Warning!

Failure to comply with these instructions may result in accidents involving serious personal injury.

Failing to follow these instructions can result in the product being damaged or destroyed.

Safety instructions

Safe use of the system is possible only when the operating instructions are read completely and the instructions contained are strictly observed.
Failure to comply with instructions marked with the"NOTE" symbol may result in serious damage to the system or one of its components.
Persons who do not have the necessary experience or knowledge of the product/ products must not use the product/ products. Besides, persons with reduced physical or mental abilities must not use the product/products, unless they are under surveillance or they have been thoroughly instructed in the use of the apparatus by a person who is responsible for the safety of these persons.
Moreover, children must be under surveillance to ensure that they do not play with the product.

It is important for everyone who is to connect, install, or use the systems to have the necessary information and access to this User Manual.

If there is visible damage to the product it must not be installed.

The appliance is not intended for use by young children or infirm persons without supervision.

Young children should be supervised to ensure that they do not play with the appliance.

Residual risk
Some of the products contains software based components. LINAK has made various possible efforts to assure that the software is free of errors and that the software has been developed according to the rules of IEC 60601-1-4 (software in Medical products). That involves Risk Analysis which shows a small residual risk for unwanted/unintended movement of actuators under specific conditions.
According to the above rules it must be informed and if necessary considered in the Risk Analysis of the final application - More details to residual risk can be provided by LINAK, if necessary.

Warning!
The plastic parts in the system cannot tolerate cutting oil.

Warning!
LINAK's actuators and electronics are not constructed for use within the following fields:
- Planes and other aircrafts
- Explosive environments
- Nuclear power generation

Warning!
If faults are observed, the products must be replaced.

Warning!
Never spray directly on the products with a high-pressure cleaner.

Warning!
Always insure that the patient is accessible in case of emergency.

Warning!
Cables must be secured safely so that persons cannot get trapped in it.

Warning!
Always use locking mechanism and O-ring

Warning!
Sockets not used must be fitted with blind plugs to ensure IP Degree

The LINAK products cannot tolerate the influence of strong solvents, basic or alkaline liquids.

Cable ordering nos.:
USB cable to be used, 0834000-1000

Modular plug cable with open end, 00xxxxx-1000

Cable ordering nos.:
Modular plug – open end:
0964140

Before installation, re-installation, or troubleshooting

- Stop the application
- Switch off the power supply and pull out the mains plug.
- Relieve the application of any loads, which may be released during the work.

Before start-up

- Make sure that the system has been installed as instructed in the User Manual.
- Make sure that the voltage of the control box is correct before the system is connected to the mains.
- System connection. The individual parts must be connected before the control box is connected to the mains.

During operation

- Ensure that the cables are not damaged.
- Unplug the mains cable on mobile equipment before it is moved.

Information on the MJB

The MJB Modular Junction Box is designed for use together with OpenBus™ control boxes.
The MJB makes it possible to connect multiple handsets, attendant controls or it makes it possible to use the MJB as a control unit for 3rd party products as such Out of Bed detection, WET sensor, USB charger, Under Bed Light etc.

LINAK A/S only delivers the OpenBus system and is not responsible for any products other than LINAK products (i.e. products from 3rd party suppliers) or the compliance of such products with the LINAK OpenBus™ system.

Repairs

In order to avoid the risk of malfunction, all repairs must only be carried out by authorised LINAK workshops or repairers, as special tools must be used and special gaskets must be fitted. Products under warranty must also be returned to authorised LINAK workshops.

Warning!
If any of the LINAK products are opened, there will be a risk of subsequent malfunction.

Disposal of LINAK's products

LINAK's products may be disposed of, possibly by dividing them into different waste groups for recycling or combustion.

We recommend that our product is disassembled as much as possible at the disposal and that you try to recycle it. As an example of main groups within sorting of waste we can mention the following:

Metal, plastic, cable scrap, combustible material and collection for recoverable resources.

Some of these main groups can be sub-divided into groups e.g. metal can be divided into iron, stainless steel and aluminium and alloy steel. Plastic can e.g. be divided into ABS, PA, PE and PP.

The MJB can be disassembled and sorted into the following recycling groups:

Component	Recycling group
MJB	Plastic housing – Plastic recycling or combustion
	Cable – Cable scrap or combustion
	PC-board – Electronics scrap

By now all our casted plastic units are provided with an interior code for plastic types and fiber contents, if any.

Misc. on the MJB system

Warranty and service life

The LINAK warranty covers manufacturing defects in the products, starting from the date of manufacture. There is 18 months' warranty for MEDLINE and CARELINE products. The warranty is limited to the value of the LINAK product.

LINAK's guarantee is only valid so far as the products have been used and maintained correctly and have not been tampered with. Furthermore, the products must not be exposed to violent treatment. In the event of this, the warranty will be ineffective / invalid. LINAK's warranty is only valid if the system is unopened and has been used correctly.

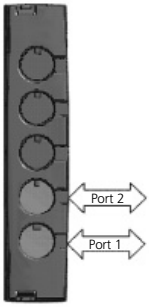
All LINAK products are designed to have an optimum service life as a matter of course, but the expected service life in a specific application is very dependent on how the products are used.

Maintenance

- The LINAK products must be cleaned at regular intervals to remove dust and dirt and inspected for mechanical damage, wear and breaks.
- The LINAK MJB is a closed unit and requires no internal maintenance.
- IPX6 is waterproof.
- Make sure that the plugs in the MJB are correctly fitted with O-rings before washing.
- Electronics must be inspected at attachment points, wires, cabinet, and plugs.
- Inspect the connections, cables, cabinet, and plugs, and check for correct functioning.

MJB with 5V SMPS, version 501-01 & 502-01 :

5V SMPS, **S**witch **M**ode **P**ower **S**upply.
The SMPS is to be used when there is a need for a power supply near the bed. E.g. to charge an electronical device; e.g. music player, camera, i-Pod, mobile phone, please refer to precautions for further details.
It is also possible to connect a bedside lamp, from our 3rd party supplier. This will be connected directly to the MJB port 2 via a modular plug. The SMPS is able to indicate with an LED, on a hand control, whether the power supply is switched on or off.



+5V Power supply
- Pin 2 (GND)
- Pin 7 (Special for IPOD)
- Pin 8 (Special for IPOD)
- Pin 10 (-5V)

OpenBus connetion

Standard functionality:
Port 1 is to be connected to the OpenBus™ control box.
The electronic device must be connected to PORT 2. The power on PORT 2 can be switched on/off via the Patient control (key 1) or the Attendant control (key 2), the status is indicated on the OpenBus™. Switching on/off the power supply is useful when the SMPS for instance is used together with a bedside lamp. If an error occurs, this is indicated on the OpenBus™. It is as standard switched off.

Features:

- Add on value for Hospital & Care beds.
- Compact and functional design which allows easy mounting.
- 2 connections: Port 1, OpenBus™ connection / Port 2, Power supply.
- Colour: Light Grey RAL 7035.
- Protection class IPX6.
- Connection to OpenBus™ control box via a modular plug cable, 6 wires.
- Bedside light (1W & 4W version), see 3rd party accessories on the OpenBus™ site on LINTRA.
- Charger for USB devices (only the 4 watt version), see precautions.
- Modular plug cable to USB (only the 4 watt version), see precautions.
- Modular plug to open end, see precautions.

Options (special article):

- Customised SW/Configuration:
  - *It is possible to define the keys used for switching On/Off the power supply and define the status and error indicator, so that it fits to the Customers system. This will generate a new configuration code for the MJB*
  - *The maximum current limit can be customised.*

Please contact your Sales Engineer at LINAK A/S for further information.

Usage:

- Compatible with all LINAK OpenBus™ Control Boxes, light & full
- 1 watt version (on battery =1 watt):
  Output power.
  - *On mains :* *5Vdc ± 0.5V / max. 1 watt*
  - *On battery*:* *5Vdc ± 0.5V / max. 1 watt*

  Current consumption.
  - *V Bus 8V:* *< 8 mA*
  - *V Permanent 40V:* *< 80 mA, please read comment under precautions.*
- 4 watt version (on battery = 2 watt):
  Output power.
  - *On mains :* *5Vdc ± 0.5V / max. 4 watt*
  - *On battery*:* *5Vdc ± 0.5V / max. 2 watt*

  Current consumption.
  - *V Bus 8V:* *< 9 mA*
  - *V Permanent 40V:* *< 150 mA, please read comment under precautions.*
- Short circuit protection:
  - *The SMPS will be switched off. This will result in an error/alarm, which will be indicated on the OpenBus™*
- Temperature protection:
  - *The SMPS will be switched off if the temperatures inside the MJB is above 110 C° this will result in an error/alarm, which will be indicated on the OpenBus™*
- Overload protection:
  - *When the SMPS is overloaded, the SMPS will be switched off. This will result in an error/alarm, which will be indicated on the OpenBus™*
    Overload for 1 watt version if current consumption on V permanent > 80 mA
    Overload for 4 watt version if current consumption on V permanent > 150 mA

- Approvals: LINAK and UL International DEMKO A/S are currently in the process of certifying MJBX0X, re. UL60601 and EN60601-1- see precautions

Precautions:

- Always use locking mechanism and O-ring.
- Sockets not used must be fitted with blind plugs to ensure IP Degree.
- When using USB cable (0834000), modular plug with open end, it is up to the customer to maintain the IP degree.
- The USB cable 0834000 is not medically approved.
- The MJB with SMPS is as standard defined as an 80 mA (1W ver.) / 150m A (4W ver.) type. This means, when the SMPS is delivering max. power on PORT 2, the remaining power left on the V permanent 40V, is maximum 120 mA for the 1W ver. and 50 mA for the 4 W ver. This can have an influence when other accessories are connected to the system.
- When the SMPS is being used on a system with battery, the output power will follow the power down mode of the Control box, see table

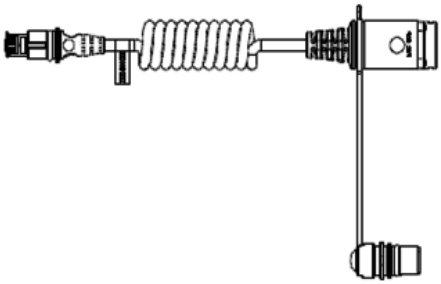
CB Power mode		SMPS 1 W output power	SMPS 4W output power
On mains		1W	4W
On battery	Power down	No Power	No Power
	"Wake Up"	1W	2W

- Some electronic devices are only to be used together with the 4 watt version. The following has been tested together with the SMPS: iPod Nano, iPod Classic, Nokia N900, HTC Touch Diamond, HTC Touch 2.
- Do not use 2 MJB variants with same device ID on the OpenBus™. This will cause conflicts and the SDT is not able to identify the different products attached.
- Before the final functional test in the production, it is important that the system is re-powered. This is to make sure that all items have been detected on the OpenBus™.
- We recommend that the end user makes a regular test procedure, in order to prevent failures and hazardous situations on the system, e.g. defective OOB sensor, squeezed cables. The MJB is not able to detect defective 3rd party products.
- LINAK only takes responsibility for LINAK products, not 3rd party products. Please pay attention to the "Patient Environment" Clause 3.79 - EN60601-1 3rd. edition: Any volume in which contact can occur between a patient and parts of the medical equipment or between a patient and other persons touching parts of the equipment. Justified practice here is 1.5 m. This volume must be subject to the Risk Analysis. It is important to inform the customer about this.
- There can be a risk of conflict with other OpenBus™ accessories, such as HB, ACP, etc. it is therefore recommended to make a system/bit overview.

Cable ordering nos.:
USB cable to be used (the USB cable is not medically approved !), 0834000-1000

Modular plug cable with open end, 00xxxxx-1000

Extension cable port, 0831310



IP Protection degree:

All LINAK products can be cleaned as follows according to their IP protection which is stated on the product label.
The IP code specifies the degrees of protection provided by the enclosures. Only the protection against ingress of water (second characteristic numeral) is specified, ingress of solid foreign objects (first characteristic numeral) is not specified and therefore replaced by the letter X in the code.

IP Protection	Cleaning instrucions
IPX0	Clean with a damp cloth
IPX1	Clean with a damp cloth
IPX2	Clean with a damp cloth
IPX3	Clean with a damp cloth
IPX4	Clean with a damp cloth
IPX5	Wash with a brush and water, but not water under pressure
IPX6	X Wash with a brush and water. The water can be under pressure, but the system must not be hosed down directly with a high pressure cleaner. Max. 20°C
IPX6 Washable	Clean by the use of water tunnels

The materials are resistant to the majority of cleaners and disinfectants used in the hospital and nursing home sector.

Cleaning with a steam cleaner, for example, is not permitted, as it will not be possible to maintain a minimum distance of 300 mm from the electrical parts.

The following directions regarding cleaners and disinfectants must be complied with:

- They must not be highly alkaline or acidic (pH value 6-8).
- They must not contain caustic agents.
- Their contents must not be able to change the structure of the surface or adhesion of the plastic.
- They must not break down grease.

The following disinfectants/detergents are recommended:

- Neodischer Dekonta, dosage 1-3%, made by CHEMISCHE FABRIK Dr. WEIGERT.
- CCOTRADE RW, dosage 0.5%, made by CCOTRADE GmbH.

Warning!
The systems must not be sprayed directly with a high-pressure cleaner.

Warning!
Interconnecting cables must remain plugged in during cleaning to prevent the ingress of water.

Precaution!
When cleaned, water must never be sprayed upwards from underneath the bed, because it is may enter the cable outlet.

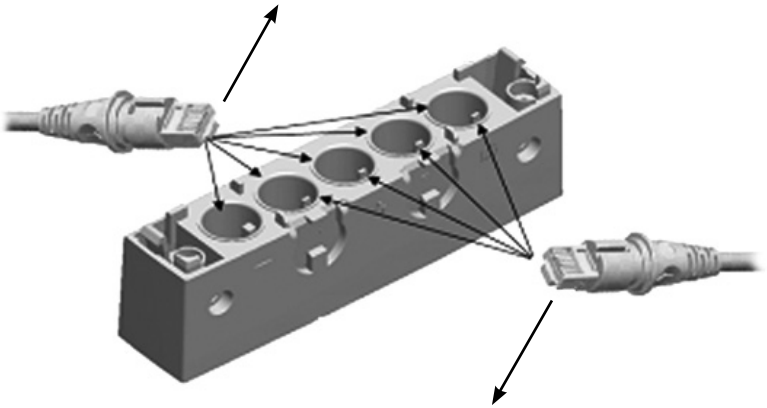
Environmental conditions:

Environmental conditions	
Operating:	
Temperature Relative humidity Atmospheric pressure	5°C to 40°C 20% to 90% @ 30°C – not condensing 700 to 1060 hPa
Storage:	
Temperature Relative humidity Atmospheric pressure	-10°C to +50°C 20% to 90% @ 30°C – not condensing 700 to 1060 hPa

Valid where nothing otherwise is stated under the specific products in a later section.

Modular plug with wide slit

To be used with **LINAK products.**
Can be connected to all ports in the MJB,
both ports with narrow and wide slit.



Modular plug with narrow slit

To be used with **3rd party products.**
Can only be connected to ports in the MJB with narrow slit. This is to prevent 3rd party products to interfere with the OpenBus™ connections.

Key to symbols

The following symbols are used on the label on the LINAK products.

Type B equipment, as per EN 60601-1

IPXX

Protection against contact/foreign matter (first character) and water (second character) as per EN60529

Class 2 equipment

For indoor use

Double insulated transformer

Protective earth

Alternating Current

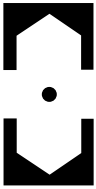
Direct current

Attention, consult accompanying documents

Lock function

Release function

Charge indicator



Safety switch/enable button

Demko approval

Fimko approval

Australian approval mark

Australian approval mark

Recognised - Component Mark

Canadian
Recognised - Component Mark

Recognised
Component Mark for Canada
and the United States

T-Mark

RW-Tüv approval

Tüv.Produkt Service

TÜVRheinland

ETL

C-ETL

LGA

UL Listing Mark

C-UL Listing Mark

C-UL US Listing Mark

UL Listing Mark

File E97199 UL file number

File E175209 UL file number

File E151104 UL file number

CSA

PSE-Mark

Product with a thermofuse

For indoor use (House).

Safety isolating transformer.

Electronics scrap

Equipment Kl.2 (Double square)

Patient part of type B (Mand)

Patient part of type BF

Earth protection

Equipment class1.

Earth

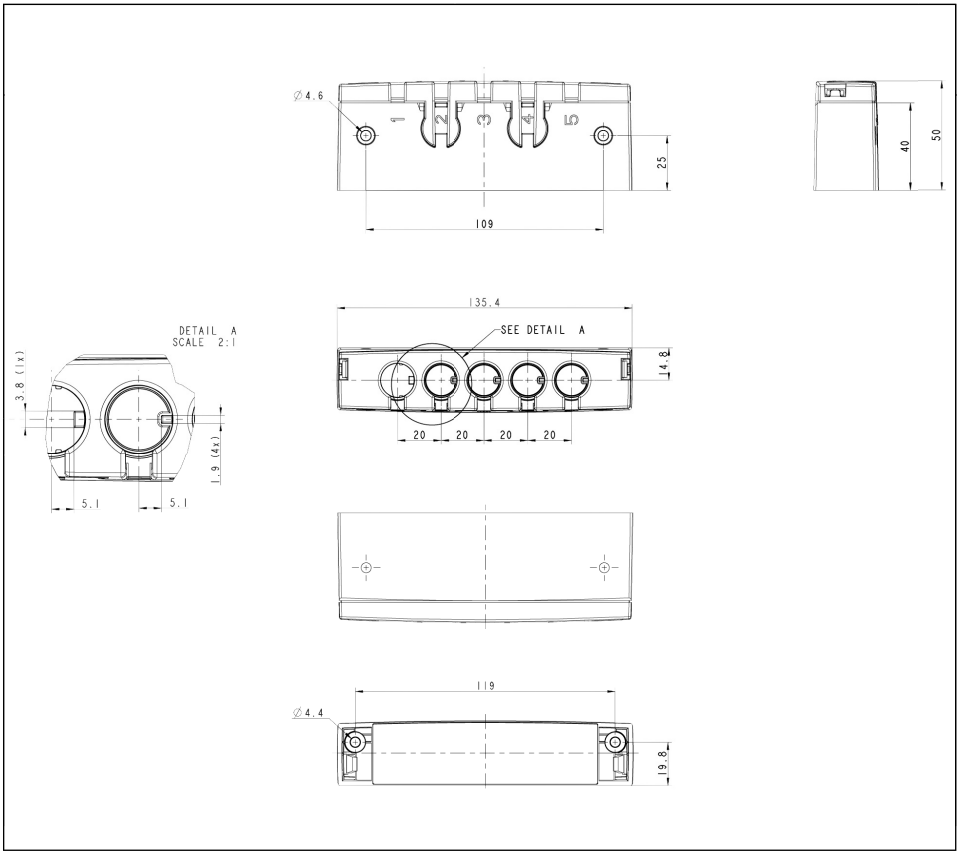
CE Mark

C-TICK

DRAWING APPENDIX

MJB - Modular Junction Box

MJB



LINAK APPLICATION POLICY

The purpose of the application policy is to define areas of responsibilities in relation to applying a LINAK product defined as hardware, software, technical advice, etc. related to an existing or new customer application.

LINAK products as defined above are applicable for a wide range of applications within the Care and Health, Comfort furniture, Desk and Industry areas. Yet, LINAK cannot know all the conditions under which LINAK products will be installed, used, and operated, as each individual application is unique.

The suitability and functionality of the LINAK product and its performance under varying conditions (application, vibration, load, humidity, temperature, frequency, etc.) can only be verified by testing, and shall ultimately be the responsibility of the LINAK customer using any LINAK product.

It is also the responsibility of the LINAK customer to make and supply a comprehensive user manual of the application.

LINAK shall be responsible solely that the LINAK products comply with the specifications set out by LINAK and it shall be the responsibility of the LINAK customer to ensure that the specific LINAK product can be used for the application in question.

FACTORIES

CHINA
LINAK (Shenzhen) Actuator Systems, Ltd.
Phone: +86 75 58 61 06 656
Fax: +86 75 58 61 06 990
E-mail: sales@linak.cn
www.linak.cn

DENMARK
LINAK A/S - Group Headquarters Guderup
Phone: +45 73 15 15 15
Fax: +45 74 45 80 48
Fax (Sales): +45 73 15 16 13
E-mail: info@linak.com
www.linak.com

SLOVAKIA
LINAK Slovakia s.r.o.
Phone: +421 51 75 63 414
Fax: +421 51 75 63 410
E-mail: jp@linak.sk
www.linak.com

USA
LINAK U.S. Inc.
North and South American Headquarters
Phone: +1 50 22 53 55 95
Fax: +1 50 22 53 55 96
E-mail: info@linak-us.com
www.linak-us.com

SUBSIDIARIES

AUSTRALIA
LINAK Australia Pty. Ltd
Phone: +61 38 79 69 777
Fax: +61 38 79 69 778
E-mail: sales@linak.com.au
www.linak.com.au

AUSTRIA
LINAK Repräsentanz Österreich (Wien)
Phone: +43 (1) 890 74 46
Fax: +43 (1) 890 74 46 15
E-mail: info@linak.de
www.linak.at

BELGIUM & LUXEMBOURG
LINAK Actuator-Systems NV/SA
Phone: +32 (0) 92 30 01 09
Fax: +32 (0) 92 30 88 80
E-mail: info@linak.be
www.linak.be

BRAZIL
LINAK Do Brasil Comércio De Atuadores Ltda.
Phone: +55 (11) 28 32 70 70
Fax: +55 (11) 28 32 70 60
E-mail: info@linak.com.br
www.linak.com.br

CANADA
LINAK Canada Inc.
Phone: +1 50 22 53 55 95
Fax: +1 41 62 55 77 20
E-mail: info@linak.ca
www.linak-us.com

CZECH REPUBLIC
LINAK C&S S.R.O.
Phone: +420 58 17 41 814
Fax: +420 58 17 02 452
E-mail: ponizil@linak.cz
www.linak.cz

DENMARK
LINAK Danmark A/S
Phone: +45 86 80 36 11
Fax: +45 86 82 90 51
E-mail: linak@linak-silkeborg.dk
www.linak.dk

FINLAND
LINAK OY
Phone: +358 10 84 18 700
Fax: +358 10 84 18 729
E-mail: linak@linak.fi
www.linak.fi

FRANCE
LINAK France É.U.R.L
Phone: +33 (0) 2 41 36 34 34
Fax: +33 (0) 2 41 36 35 00
E-mail: linak@linak.fr
www.linak.fr

GERMANY
LINAK GmbH
Phone: +49 60 43 96 55 0
Fax: +49 60 43 96 55 60
E-mail: info@linak.de
www.linak.de

INDIA
LINAK A/S India Liaison Office
Phone: +91 12 04 39 33 35
Fax: +91 12 04 27 37 08
E-mail: info@linak.in
www.linak.in

IRELAND
LINAK UK Limited - Ireland
Phone: +44 (0) 121 544 2211
Fax: +44 (0) 121 544 2552
E-mail: sales@linak.co.uk
www.linak.co.uk

ITALY
LINAK Italia S.r.l
Phone: +39 02 48 46 33 66
Fax: +39 02 48 46 82 52
E-mail: info@linak.it
www.linak.it

JAPAN
LINAK K.K.
Phone: +81 45 53 30 802
Fax: +81 45 53 30 803
E-mail: linak@linak.jp
www.linak.jp

MALAYSIA
LINAK Actuators Sdn. Bhd.
Phone: +60 42 10 65 00
Fax: +60 42 26 89 01
E-mail: info@linak-asia.com
www.linak.my

NETHERLANDS
LINAK Actuator-Systems B.V.
Phone: +31 76 5 42 44 40
Fax: +31 76 5 42 61 10
E-mail: info@linak.nl
www.linak.nl

NEW ZEALAND
LINAK New Zealand Ltd.
Phone: +64 95 80 20 71
Fax: +64 95 80 20 72
E-mail: nzsales@linak.com.au
www.linak.co.nz

NORWAY
LINAK Norge AS
Phone: +47 32 82 90 90
Fax: +47 32 82 90 98
E-mail: info@linak.no
www.linak.no

POLAND
LINAK Polska
Phone: +48 (22) 500 28 74
Fax: +48 (22) 500 28 75
E-mail: dkreh@linak.dk
www.linak.pl

REPUBLIC OF KOREA
LINAK Korea Ltd.
Phone: +82 (0) 2 6231 1515
Fax: +82 (0) 2 6231 1516
E-mail: scully@linak.kr
www.linak.kr

RUSSIAN FEDERATION
000 LINAK
Phone: +7 49 52 80 14 26
Fax: +7 49 56 87 14 26
E-mail: info@linak.ru
www.linak.ru

SPAIN
LINAK Actuadores, S.L.u
Phone: +34 93 58 82 777
Fax: +34 93 58 82 785
E-mail: linakact@linak.es
www.linak.es

SWEDEN
LINAK Scandinavia AB
Phone: +46 87 32 20 00
Fax: +46 87 32 20 50
E-mail: info@linak.se
www.linak.se

SWITZERLAND
LINAK AG
Phone: +41 43 38 83 188
Fax: +41 43 38 83 187
E-mail: info@linak.ch
www.linak.ch

TAIWAN
LINAK A/S Taiwan Representative Office
Phone: +886 22 72 90 068
Fax: +886 22 72 90 096
E-mail: michael.chen@linak.com.tw
www.linak.com.tw

TURKEY
LINAK Ith. Ihr. San. ve Tic. A.S.
Phone: + 90 31 24 72 63 38
Fax: + 90 31 24 72 66 35
E-mail: info@linak.com.tr
www.linak.com.tr

UNITED KINGDOM
LINAK UK Limited
Phone: +44 (0) 121 544 2211
Fax: +44 (0) 121 544 2552
E-mail: sales@linak.co.uk
www.linak.co.uk

DISTRIBUTORS

ARGENTINA
Novotec Argentina SRL
Phone: +54 (11) 4303 8900 / 89
Fax: +54 (11) 4032 0184
E-mail: info@novotecargentina.com
www.novotecargentina.com

AUSTRALIA
Ballarat Industrial Supplies
www.ballind.com.au

BL Shipways & Co
www.blshipway.com.au

Gas Strut Marine and Industrial
www.gasstrutmarine.com.au

Prime Motion & Control
www.primehyd.com.au

West Vic Industrial Supplies
www.westvicindustrial.com.au

COLOMBIA
MEM Ltda
Phone: +57 (1) 334 7666
Fax: +57 (1) 282 1684
E-mail: servicioalcliente@memltda.com.co
www.memltda.com.co

INDONESIA
Pt. Himalaya Everest Jaya
Phone: +62 21 54 48 956 / 65
Fax: +62 21 61 94 658 / 1925
E-mail: hejplastic-div@centrin.net.id
www.hej.co.id

IRAN
Bod Inc.
Phone: +98 21 88 99 86 35 - 6
Fax: +98 21 88 95 44 81
E-mail: info@bod.ir
www.bod.ir

MEXICO
ILSA S.A. de C.V.
Phone: +52 (55) 53 88 39 60
Fax: +52 (55) 53 88 39 66
E-mail: linak@ilsamexico.com
www.ilsamexico.com

PERU
Percy Martin Del Aguila Ubillus
Phone: +51 99 88 39 879

RUSSIAN FEDERATION
000 FAM
Phone: +7 81 23 31 93 33
Fax: +7 81 23 27 14 54
E-mail: purchase@fam-drive.ru
www.fam-drive.ru

SINGAPORE
Servo Dynamics Pte. Ltd.
Phone: +65 68 44 02 88
Fax: +65 68 44 00 70
E-mail: servodynamics@servo.com.sg
www.servo.com.sg

SOUTH AFRICA
Industrial Specialised Applications CC
Phone: +27 11 31 22 292 or
+27 11 20 77 600
Fax: +27 11 31 56 999
E-mail: garth@isagroup.co.za
www.isaza.co.za

UNITED ARAB EMIRATES
Mechatronics
Phone.: +971 4 26 74 311
Fax: +971 4 26 74 312
E-mail: mechtron@emirates.net.ae
www.mechatronics.ae

For contact details on other countries please visit *www.linak.com* or contact:

LINAK INTERNATIONAL
Phone: +45 73 15 15 15
Fax: +45 74 45 90 10
E-mail: info@linak.com
www.linak.com

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